IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF PUERTO RICO

In re: THE FINANCIAL OVERSIGHT AND MANAGEMENT BOARD FOR PUERTO RICO As a representative of THE COMMONWEALTH OF PUERTO RICO, et al. Debtor	PROMESA Title III Case No. 3:17-bk-03283 (LTS)
In re: THE FINANCIAL OVERSIGHT AND MANAGEMENT BOARD FOR PUERTO RICO As a representative of THE EMPLOYEES RETIREMENT SYSTEM OF THE GOVERNMENT OF PUERTO RICO, Debtor.	PROMESA Title III Case No. 3:17-cv-01685 (LTS) Case No. 3:17-bk-03566 (LTS)

REBUTTAL EXPERT REPORT OF FATEN SABRY, PH.D.

NERA ECONOMIC CONSULTING, INC.

CONFIDENTIAL

June 12, 2019

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LIST OF EXHIBITS

I. Assignment and Summary of Opinions

1. I filed an expert report in this matter (the "Sabry Report" or "my report") on behalf of the Movants on May 30, 2019.[1] On the same date, Mr. Gaurav Malhotra filed a declaration on behalf of the FOMB (the "Malhotra Declaration.") I have been asked by counsel for the Movants to review and respond to the opinions in the Malhotra Declaration.

2. I understand that fact discovery in this matter is ongoing. My opinions are subject to revisions based on new information (including information from ongoing fact discovery, new reports or testimony by the FOMB's proffered experts, or new filings by the FOMB's counsel), which subsequently may be provided to, or obtained by, me.

3. My opinions are summarized as follows:

a. Mr. Malhotra's conclusion that the net present value ("NPV") of the PayGo projections exceeds the debt obligation does not necessarily mean that the ERS bond obligations will be repaid. Even if the PayGo fees are a source of repayment to the ERS bondholders, Mr. Malhotra's PayGo projections did not account for the risks of political decisions, such as additional benefit changes, that could change the future PayGo fees. For example, prior to the Commonwealth's decision to change the ERS system to PayGo in 2017, the NPV of the employer contributions exceeded the ERS bond obligations. Notwithstanding, the Commonwealth purported to eliminate the employer contributions and end the servicing of the ERS Bonds after the switch to PayGo. Mr. Malhotra's projections did not reflect the current and potential future financial distress of public corporations, municipalities and the Commonwealth, as well as the risks associated with the timing of the PayGo projections relative to the timing of the bond obligations. Mr. Malhotra's PayGo projections did not take into account if and when the PayGo fees will be paid and if and when the ERS Bonds will be serviced. These factors, which

[1] Unless otherwise noted, defined terms shall have the same meaning as in the Sabry Report.

were ignored in Mr. Malhotra's estimate, could increase the risk to repayment regardless of the size of the NPV of the PayGo projections relative to the ERS Bonds. *See* Section IV.

b. Mr. Malhotra's NPV of the PayGo projections is inflated because he used incorrect discount rates that do not reflect the riskiness of the future cash flows and the risk of default of the obligors. In addition, his NPV measure does not account for the risk of discontinuance of the repayment of the bonds and does not account for potential errors in the assumptions underlying the actuarial projections, or the uncertainty regarding the timing of lifting the stay, among other risks. All these factors could affect the NPV of the PayGo projections and the servicing of the bonds. *See* Section V.

II. Qualifications and Materials Relied Upon

A. Qualifications

4. My qualifications are outlined in the Sabry Report.

B. Materials Considered

5. The Sabry Report provided a list of materials that I considered for the analyses in my report. Additional materials that I considered are listed in Exhibit 1.

Exhibit 1. *Additional Materials Considered – See Attached*

III. The Malhotra Declaration

6. Mr. Malhotra was asked to calculate the "[NPV] of projected retirement benefit payments" to be paid to pensioners who participated in the ERS retirement system under the PayGo funding arrangement and to compare that NPV to the amount of purported ERS

bondholder claims.[2] I will refer to Mr. Malhotra's estimate as the "NPV of the PayGo projections."

7. Mr. Malhotra concluded that the NPV of the PayGo projections is greater than the ERS bondholder claims.[3] He estimated that the NPV of the PayGo projections for the period 2019 to 2058 is in the range of $26.2 billion to $26.9 billion (depending on the discount rates that he used) which exceeded the purported ERS bondholder claims of $3.8 billion.[4]

IV. MR. MALHOTRA'S NPV OF THE PAYGO PROJECTIONS IS A MISLEADING MEASURE OF THE ADEQUACY OF FUNDS TO SERVICE THE ERS BONDS

8. Mr. Malhotra's estimate of the NPV of the PayGo projections is a misleading measure of the adequacy of funds to service the ERS Bonds. First, before the switch to PayGo, the ERS Bonds were paid from cash flow streams including employer contributions whose present value exceeded the bond obligations. Notwithstanding, the bonds have not received any interest or principal payments since August 2018. Second, even if the PayGo fees are a source of repayment to the ERS bondholders, future changes to the retirement system could discontinue the repayment of the bonds regardless of the size of the NPV of the PayGo projections. In addition, the financial distress of the municipalities, public corporations and the Commonwealth further increases the risk to repayment. His analysis assumes there would be no interruption to the PayGo payments over the next 40 years. Mr. Malhotra's NPV estimate does not address the timing of the PayGo payments relative to the payment of the bond obligations.

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[2] Malhotra Declaration, ¶ 7.

[3] Malhotra Declaration, ¶ 19.

[4] Malhotra Declaration, ¶¶ 15-17, Exhibit 1A. Mr. Malhotra appears to have omitted from the asserted ERS bondholder claim accrued and unpaid interest "on the outstanding Bonds at the rates of interest specified in the Resolution." *See* Claim # 16777 filed May 24, 2018 by The Bank of New York Mellon, as Fiscal Agent, Debtor Name: Employers Retirement System of the Government of the Commonwealth of Puerto Rico.

A. The NPV of the PayGo Projections Relative to the Bondholder Claims Does Not Ensure Repayment of the ERS Bonds

9. The Malhotra Declaration opined that the NPV of the PayGo projections "significantly exceed the asserted ERS bondholder claim."[5] Mr. Malhotra's comparison of the NPV to the debt obligation does not necessarily demonstrate the adequacy of funds to service the ERS Bonds. For example, as of fiscal year 2015, the NPV of the employer contributions projected by Milliman was $28.5 billion compared to Mr. Malhotra's purported ERS bond obligations of $3.8 billion.[6] However, in 2017, the government of Puerto Rico passed Joint Resolution 188 that sought to end the servicing of the ERS Bonds.[7]

B. Mr. Malhotra's Analysis Does Not Account for the Credit Risk and Timing of Payments that Could Reduce His PayGo Projections

10. Mr. Malhotra does not address various political and regulatory risks as well as the financial distress of the municipalities, public corporations and the Commonwealth that could reduce the PayGo projections. In addition, both the PayGo projections and the principal and interest payments on the ERS Bonds are future cash flows that would occur over time and not as a single lump-sum payment. Mr. Malhotra's comparison of NPV of the PayGo projections to bond obligations implicitly assumes that all PayGo fees will be timely collected in full, and in such a way that will match the obligations of the bonds. He does not assess the uncertainties related to the timely or complete collection of the PayGo fees. Therefore, the comparison of the NPV of the PayGo projections to the bondholders' claims is a misleading measure of the adequacy of funds to service the ERS Bonds.

[5] Malhotra Declaration, ¶ 17.

[6] The present value of employer contributions is based on the forecasted employer contributions (including employer contributions for basic benefits, contributions under Law 70 and for system-administered bonus benefits, and additional uniform contributions) obtained from Milliman's actuarial valuation report for the fiscal year ended June 30, 2015. It is calculated using the Bond Buyer General Obligation 20-Bond Municipal Bond Index of 3.8% as of June 2015, similar to that used in the Malhotra Declaration.

[7] Government of Puerto Rico, House of Representatives, House Joint Resolution 188, June 6, 2017, pp. 3, 4.

1. Mr. Malhotra's NPV of the PayGo Projections Does Not Account for Regulatory or Political Risks

11. Mr. Malhotra's PayGo projections do not account for any potential future changes in the retirement benefits which could have a negative impact on the PayGo projections. Many such changes have occurred over the years. For example, as a result of the switch to PayGo, employees hired on or after July 1, 2017 have been excluded from participating in the ERS system and ERS members do not accrue additional benefits under the legacy retirement system as of June 30, 2017.[8] Following the change to PayGo, Milliman reduced its projected payments for retirement benefits accrued by ERS members for fiscal years 2019 to 2058 from $66.4 billion to $52.8 billion, or by about 20 percent.[9] The Malhotra projections, which were made after the proposed 10 percent pension cut according to the certified fiscal plan of May 2019, reduced projected payments for fiscal years 2019 to 2058 to $47.7 billion, compared to $52.8 billion in Milliman's December 2017 projections for the same time period.[10] Overall, Mr. Malhotra's projections represent a 28 percent reduction in the projections from Milliman's 2015 actuarial report.[11] Mr. Malhotra did not assess the impact of any additional pension changes which would affect his PayGo projections.

2. Mr. Malhotra Did Not Account for the Financial Distress of Municipalities, Public Corporations and the Commonwealth Which Would Have Affected His Projections

12. Mr. Malhotra estimated the future retirement benefits that would be invoiced to the various obligors which is not the relevant measure to assess whether the debt will be serviced. The relevant measure should take into account the fact that many PayGo invoices have not been paid on time and in full. As demonstrated in the Sabry Report, as of April 2019, Puerto

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[8] Milliman, "Puerto Rico Government Employee Retirement System: June 30, 2017 Actuarial Valuation Report," pp. 6, 7.

[9] *See*, Milliman, "Puerto Rico Government Employee Retirement System: June 30, 2015 Actuarial Valuation Report," and MALHOTRA0000003.

[10] Malhotra Declaration, ¶¶ 11, 12 and MALHOTRA0000003.

[11] *See*, Milliman, "Puerto Rico Government Employee Retirement System: June 30, 2015 Actuarial Valuation Report," MALHOTRA0000003, and Malhotra Declaration, Exhibit 1A.

Rico's municipalities and public corporations have not paid 38.2 percent and 19.3 percent of their respective PayGo invoices for fiscal year 2018.[12]

13. Puerto Rico's Department of Treasury itself acknowledged the risks associated with collecting PayGo fees from certain public corporations and municipalities.[13] This indicates that the collection of future PayGo fees is a credit risk that should be reflected in the projections of retirement benefits payments. If Mr. Malhotra had accounted for the risk of nonpayment of PayGo invoices, his projections would have been lower.

14. I understand from counsel that if municipalities are relieved from the obligations to remit PayGo invoices because of the passage of Senate Bill 1258, the Commonwealth would pay the unfunded pension benefits but not necessarily the unpaid PayGo invoices of the municipalities. Mr. Malhotra simply asserts that "[s]hould municipalities no longer be required to make PayGo payments under Act 29-2019, the $47.7 billion would still be fully paid by the Commonwealth."[14] However, Mr. Malhotra does not address the reasons to include the PayGo fees of municipalities in his projections, given that municipalities may no longer be obligated to remit any payments. In fact, Mr. Malhotra estimated the NPV of the PayGo projections after excluding the municipalities in his workpapers, but did not report the results in his declaration. Had Mr. Malhotra relied on his PayGo projections without the municipalities, the NPV of PayGo projections in his declaration would have been lower by 12 percent.

15. Even if the Treasury payments will cover the unpaid PayGo fees of municipalities, Mr. Malhotra ignored the uncertainties regarding the financial ability of the

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[12] *See*, Sabry Report, Section VI.B.

[13] A document produced by the Commonwealth titled "PayGo Restructuring Charge and Funding Risk Matrix" indicates 'moderate' funding risk for municipalities and 'moderate' or 'high' funding risk for several public corporations. *See*, ERS-CW_LS0000326.

[14] Malhotra Declaration, ¶ 18. "Legislature Passes Bill to Free Municipal Governments from Pension, Health Plan Contributions," *Reorg*, May 8, 2019, p.1. *See also*, Rossello Enacts Senate Bill 1258 Despite Promesa Board Warning," *Reorg*, May 17, 2019, p. 1.

Commonwealth and public corporations.[15] As demonstrated in the Sabry Report, the Commonwealth and public corporations have been and continue to be in financial distress.[16]

3. Mr. Malhotra's NPV Estimate Ignores that the PayGo Fees Are Collected and Spent Over Time

16. PayGo fees are based on monthly pension costs such that the PayGo fees for June 2020, for example, would be spent on pension benefits in June 2020, and are not necessarily saved for future bond service.[17] As discussed in the Sabry Report, I understand that PayGo fees are not accumulated in a fund that grows over time. Instead, PayGo invoices are sent monthly to employers and remittances are used to pay monthly benefits for current beneficiaries after they are received.[18]

17. The following example illustrates why the NPV is a misleading measure of the adequacy of the funds to service the debt as it ignores the timing of the projections and debt obligations. Mr. Malhotra estimated the NPV of the PayGo projections through 2058 to be $26.2 to 26.9 billion.[19] If the Commonwealth terminated the PayGo fees in 2030 then there would not be PayGo fees to service the bond obligations at that point. The NPV of the PayGo projections, using Mr. Malhotra's approach, through fiscal year 2030 would be $14.1 billion to $14.3 billion which is greater than the ERS bondholder purported claim of $3.8 billion. However, the bond obligations would not be serviced following the termination of PayGo regardless of the size of the remaining PayGo projections.

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[15] Malhotra Declaration, ¶ 18.

[16] *See*, Sabry Report, Section VI.

[17] The Memorandum of Understanding between the Government of Puerto Rico, AAFAF, and ERS generally describes how payments for Puerto Rico's retirement systems would operate after the ERS assets were depleted. ERS-CW_LS0000388, p. 3.

[18] *See*, Sabry Report, Section V.A.

[19] Malhotra Declaration, Exhibit 1A.

V. Mr. Malhotra Overstates the NPV of the PayGo Projections

18. The academic literature has established the appropriate methods to evaluate the NPV of projected cash flows after taking into account the risk of default of the obligors and other risks. For example, a standard economic framework models the relationship between the value of assets (such as, in this case, NPV of the PayGo projections), the probability of default of the obligor over time (such as, in this case, the failure to pay PayGo fees or the elimination of PayGo fees due to policy changes), and the expected losses in value given default.[20] Mr. Malhotra's NPV uses the projected PayGo fees without taking into account any probability that the fees may not be collected or could be discontinued by future changes in laws, which could end the servicing of the bonds. In addition, Mr. Malhotra used a discount rate that is based on investment-grade municipal bonds. This means that his discount rates ignore various uncertainties that may reduce or terminate the fees. Mr. Malhotra used an inappropriate projected stream of cash flows and inappropriate discount rates that inflate his estimates. In addition, Mr. Malhotra did not account for the margin of error underlying the actuarial assumptions for the PayGo projections, did not present a range of estimates to account for the uncertainties in his projections and did not account for the timing of lifting the stay.

A. Mr. Malhotra Used Inappropriate Discount Rates

19. Mr. Malhotra discounted the projected retirement benefit payments under PayGo using discount rates of 3.58% and 3.79%. These discount rates were the estimated interest rates based on the Bond Buyer General Obligation 20-Bond Municipal Bond Index.[21] His choice of discount rates is incorrect and inflates his NPV estimate. The Bond Buyer General Obligation 20-Bond Index consists of 20 general obligation bonds that mature in 20 years. The average rating of the 20 bonds is roughly equivalent to Moody's Investors Service's Aa2 rating and Standard & Poor's Corp.'s AA rating.[22] This means that Mr. Malhotra's discount rates reflect the

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[20] *See*, John C. Hull. Options, Futures and Other Derivatives (Boston, Prentice Hall, 2015), pp. 544-549. See also, Focardi, Sergio M., and Frank J. Fabozzi. The Mathematics of Financial Modeling and Investment Management. Vol. 138. (John Wiley & Sons, 2004), and Donald J. Smith. Bond Math: The Theory Behind the Formulas (John Wiley & Sons, 2011).

[21] Malhotra Declaration, ¶¶ 15, 16.

[22] MSRB, Understanding Municipal Market Indices, Yield Curves and Benchmarks, August 2017, p. 4.

riskiness of investment grade bonds which inflates his NPV of PayGo projections. The discount rates selected by Mr. Malhotra are inappropriate for the purpose of assessing the risks associated with the PayGo projections. The discount rates should reflect the credit risk that is associated with the PayGo projections including the risks that the obligors may not be able or willing to pay.

20. Mr. Malhotra inappropriately relied on discount rates that Milliman used for actuarial purposes. The calculations in the Milliman actuarial reports are meant to represent the liabilities of the ERS system which are based on benefits that members earned due to their prior service. However, the discount rates recommended by accounting rules for the purpose of estimating accounting liabilities do not necessarily reflect additional risks associated with the PayGo fees as the means to fund those benefits.[23] The credit risks associated with the PayGo fees include political and regulatory risks as well as the financial distress of the municipalities, public corporations and the Commonwealth. Mr. Malhotra's NPV estimate does not account for any of these risks.

21. The creditworthiness of the Commonwealth, public corporations and municipalities is different from that of the municipalities in the Bond Buyer 20-Bond Municipal Bond Index. For example, the Commonwealth of Puerto Rico is currently rated as "highly speculative and are likely in, or very near, default" by Moody's. Also, Standard & Poor's rating of the Commonwealth implied that default was a "virtual certainty" before they withdrew their ratings in March 2018.[24] Also, the ERS Bonds have never achieved credit ratings that are similar

[23] Milliman, Puerto Rico Government Employees Retirement System, June 30, 2017 Actuarial Valuation Report, p. 5. *See*, Brownlee, Harold J., and Richard Daskais. "Pension plans-Choosing critical assumptions." In Proceedings 2nd AFIR Colloquium, vol. 2, pp. 153-62. 1991. "Many actuaries have traditionally used discounting rates for pension calculations that are lower, often substantially lower, than prevailing expected rates of return. One reason given for this practice is that actuaries are "conservative" and that using a low discounting rate protects the participants in the plan." *See also*, Brown, Jeffrey R. and George G. Pennacchi, "Discounting Pension Liabilities: Funding versus Value," June 2015. "[T]he appropriate discount rate for pension liabilities depends on the objective. In particular, if the objective is to measure pension under- or over- funding, a default-free discount rate should always be used, even if the liabilities are themselves not default-free. If, instead, the objective is to determine the market value of pension benefits, then it is appropriate that discount rates incorporate default risk."

[24] A 'Ca' rating denotes that obligations are "highly speculative and are likely in, or very near, default, with some prospect of recovery in principal and interest." See, Moody's Investors Service, Inc, "Rating Symbols and

to the bonds in the index that Mr. Malhotra used for discounting his PayGo projections. The ERS Bonds were rated at the lowest investment grade rating of Baa3 by Moody's and BBB- by S&P and Fitch at issuance. The ERS Bonds are currently rated C by Moody's and D by Fitch.[25]

22. Less creditworthy borrowers generally require higher discount rates or yield-to-maturity ("YTM") to reflect the higher premium that investors demand to compensate them for the higher credit risk relative to the bonds that are rated investment grade.[26] By way of comparison, as of June 4, 2019, the YTM on the Commonwealth's general obligation bonds maturing in 2035 was 17.53%.[27] The yield is five times greater than the 3.58% and 3.79% discount rates that Mr. Malhotra used. This difference in the YTMs reflects the market's perception of the higher probability of default of these bonds relative to the bonds in the Bond

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Definitions," February 2019, p. 6. An obligation with 'D' rating is in default or in breach of an imputed promise. The 'D' rating can also be used upon when "default on an obligation is a virtual certainty," due to actions such as filing of a bankruptcy petition or automatic stay provisions. See, S&P Global Ratings, "S&P Global Ratings Definitions," October 31, 2018 p. 3.

[25] *See*, "Moody's Assigns Baa3 To Approximately $4 B Puerto Rico Pension Funding Bonds, Series A," Moody's Investor Service Press Release, January 4, 2008. Aldrete-Sanchez, Horacio and David G. Hitchcock, "Puerto Rico Employees Retirement System's $4.2B Of Senior Pension Funding Bonds Rated 'BBB-'," Standard & Poor's Financial Services LLC, January 14, 2008. Porter, Laura and Richard Raphael, "Fitch Rates Puerto Rico's $4.3B Pension Funding Bonds 'BBB-'," Fitch Ratings, January 11, 2008.

On April 5, 2017, Moody's downgraded the Employees Retirement System's bonds backed by government pension contributions from 'Ca' to 'C', reflecting "persistent pressures on Puerto Rico's economic base that indicate a diminishing perceived capacity to repay." Moody's noted that while it continues to believe "essentially all of Puerto Rico's debt will be subject to default and loss in a broad restructuring, the securities being downgraded face more severe losses than [it] had previously expected, in the light of Puerto Rico's projected economic pressures." *See,* Hampton, Edward and Emily Raimes, "Moody's Downgrades $13 Billion of Puerto Rico Bonds, Revises Outlook to Negative from Developing," Moody's Investors Service, Inc., April 5, 2017. On July 20, 2017, Fitch downgraded the ERS Bonds from 'C' to 'D', reflecting the failure to make scheduled July 1st interest payment as a result of the application of the automatic stay. *See*, Krop, Karen and Laura Porter, "Fitch Downgrades Puerto Rico Pension Bonds to 'D'," Fitch Ratings, July 20, 2017.

[26] The yield-to-maturity is defined as "the interest rate that makes the present value of a bond's payments equal to its price." Zvi Bodie, Alex Kane, and Alan J. Marcus, Investments, 8th Ed. (Boston: McGraw-Hill, 2009), p. 456. For a discussion of why lower credit quality is associated with higher yield-to-maturity, see "What are High-Yield Corporate Bonds?" SEC Investor Bulletin, SEC Pub. No. 150 (6/13), p. 1

[27] The Commonwealth's general obligation bonds maturing in 2035 are term bonds with an original principal amount of $3.5 billion and a coupon rate of 8%. Yield-to-maturity data are from Bloomberg LP. At issuance, the YTM on the Commonwealth's general obligation bonds maturing in 2035 was 8.7%. *See,* Appendix.

Buyer Index that Mr. Malhotra used.[28] Even after the current restructuring, Puerto Rico may continue to face high borrowing costs. Political entities that have demonstrated a need and willingness to default on bonds face higher discount rates.[29]

23. For example, if Mr. Malhotra used the YTM on the Commonwealth's general obligation bonds maturing in 2035 as a discount rate instead of 3.79%, his estimate of the NPV of the PayGo projections would be reduced by approximately 71.5 percent.[30]

24. The NPV of the PayGo projections is irrelevant to the adequacy of funds to service the debt because the bond holders only receive scheduled interest and principal repayments that may not materialize because of various uncertainties.

B. Mr. Malhotra's NPV Does Not Account for the Risk of Discontinuance of the PayGo Fees

25. As discussed in detail in Section IV, Mr. Malhotra ignored the probability that the PayGo projections may not materialize because the fees are not collected or because the Commonwealth may decide in the future to switch the law in such a way that the PayGo fees are discontinued.

C. Mr. Malhotra's NPV Does Not Account for Potential Errors in Actuarial Assumptions

26. Mr. Malhotra did not account for any of the uncertainties of the projections that he discussed in his workpapers.[31] For example, Mr. Malhotra's workpapers state that "[t]here will usually be differences between projected and actual results because events and

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[28] I understand that these discount rates may reflect the risks of reduced recovery due to the restructuring process, while at the same time they may not reflect all the uncertainties associated with the PayGo projections that I discussed in Section IV.

[29] Moser, Christoph. "The impact of political risk on sovereign bond spreads-evidence from Latin America." (2007).

[30] Mr. Malhotra's NPV of the PayGo projections is $26.2 billion using a 3.79% discount rate. The NPV of PayGo projections is $7.5 billion using a 17.53% discount rate.

[31] MALHOTRA000179.

circumstances frequently do not occur as expected and those differences may be material." The workpapers also reference the problems associated with relying on outdated data: "[w]e are currently basing our analysis on data as of July 1, 2016 .... A fair amount of time has elapsed since July 1, 2016" and "[l]onger periods in which data is rolled forward introduce greater variability in the accuracy of the roll-forward." The notes in the workpapers conclude that "updated census data will most likely produce difference results from our current projections, although how different is hard to assess."[32]

27. Mr. Malhotra's NPV of the PayGo projections does not account for any of these uncertainties that could affect his PayGo projections. This is in contrast to the analysis of the debt service coverage ratio by a third-party consultant, Global Insight, which was presented in the offering documents of the ERS Bonds.[33] Global Insight provided five alternative scenarios of their projections including "government downsizing" or "take-off" scenarios in which the projected payroll, and thus employer contributions, would be lower or higher than their baseline forecast. As of 2059 their five alternative payroll projections ranged from 19% lower to 61% higher than the ones in their baseline projections. By 2017, only nine years after their report was published, the actual payroll was 36% lower than Global Insight's most pessimistic scenario and 48% lower than their baseline projections. Mr. Malhotra did not provide any assessment of the margin of error of his projections or conduct any sensitivity analysis of his results. He simply presented baseline retirement payments where he projected 40 years into the future without an assessment of the margins of errors or sources of uncertainties of his projections.

28. On my behalf, counsel requested additional information regarding Mr. Malhotra's projections for the "stream of benefits payable over the lifetime" of each individual member record in the census data as well as models and calculations supporting these projections but

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[32] MALHOTRA000179. In addition, the municipality of San Juan filed a lawsuit against the ERS, among others, to investigate the potential errors in San Juan's Pay-Go invoices. *See, Demanda Jurada, Municipio Autonomo de San Juan, vs. Estado Libre Asociado de Puerto Rico et al., May 29, 2019.*

[33] *See*, Official Statement of Senior Pension Funding Bonds, Series C, pp. 17-19 and Appendix IV.

have not yet received these materials.[34] I reserve the right to conduct further work upon receiving such information.

D. Mr. Malhotra's NPV of the PayGo Projections Does Not Consider the Timing of Lifting the Stay

29. Mr. Malhotra calculated the NPV of the PayGo projections using projections that included fiscal year 2019.[35] Moreover, the time when the stay is lifted cannot be predicted with certainty and as such could also affect his estimate of the NPV of the PayGo projections. I understand that the ERS Bonds will not get paid as long as the stay is in effect. For example, if the stay is not lifted until the end of fiscal year 2021, the NPV of the PayGo projections in the Malhotra Declaration would be reduced by the present value of two additional years of aggregate PayGo projections.

[34] Malhotra Declaration, ¶ 14.

[35] Malhotra Declaration, Exhibit 1A and MALHOTRA000179. This error overstated the NPV of the PayGo projections because as of the date of this report, fiscal 2019 is almost over, and any PayGo fees collected that year will have been spent.

VI. MISCELLANEOUS

30. My opinions are subject to revision based on new information (including new reports, workpapers, or testimony by the FOMB's experts or fact witnesses), which subsequently may be provided to, or obtained by, me.

By: ______________________

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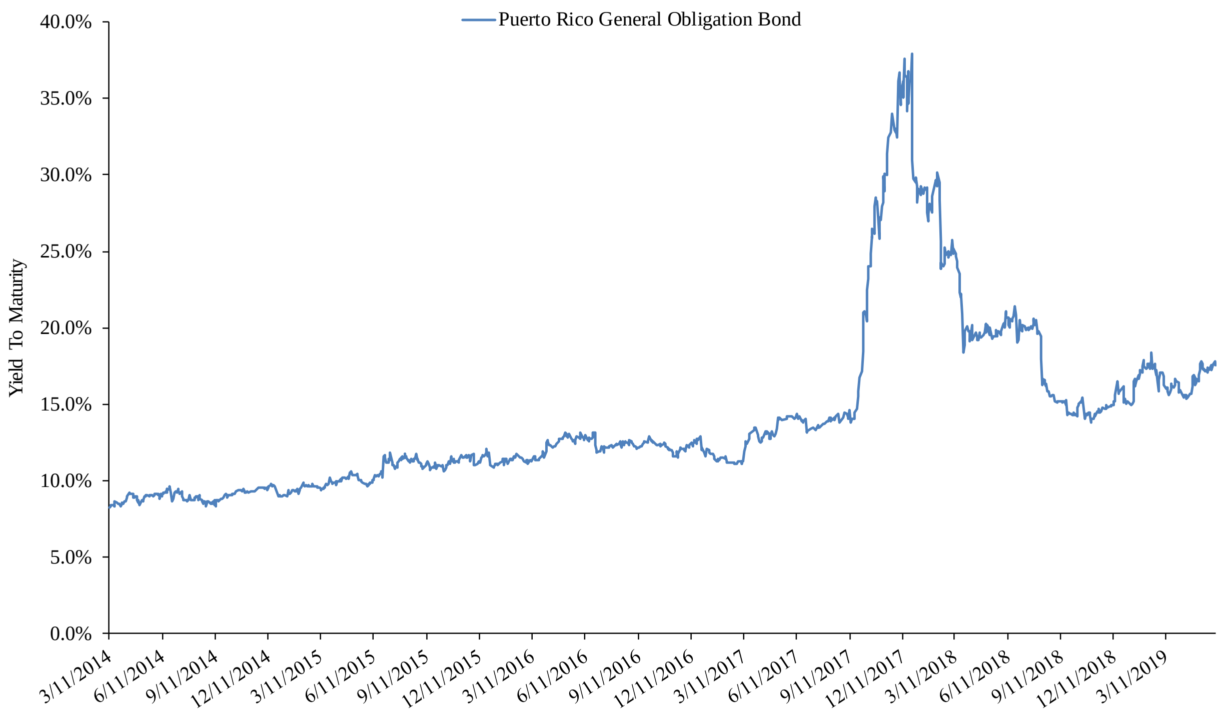
APPENDIX

Exhibit 2. *Yield to Maturity of Commonwealth of Puerto Rico General Obligation Series A Bonds of 2014 Due 2035 – March 2014 Through June 2019*



Notes and Sources:

- Data are from Bloomberg, L.P, with MSRB as pricing source.
- Commonwealth of Puerto Rico issued the most recent General Obligation bond, 8% Term Bonds due July 1, 2035, on March 11, 2014.

Exhibit 1. Additional Materials Considered

<u>Expert Reports:</u>

- Declaration of Gaurav Malhotra In Connection With Motion For Relief From the Automatic Stay, May 30, 2019.
- Expert Report of Andrew A. Samwick, Ph.D., May 30, 2019.

<u>Others:</u>

- "Demanda Jurada," *In re: Municipio Autonomo de San Juan, vs. Estado Libre Asociado de Puerto Rico et al.,* May 29, 2019.
- "Plan Support Agreement," June 7, 2019.
- "PREPA Public Disclosure," July 22, 2015.
- Anantharaman, Divya and Elizabeth Chuk, "The Impact of Governmental Accounting Standards on Public-Sector Pension Funding," April 30, 2018.
- Bank of New York Mellon, "Proof of Claim 16777," May 22, 2018.
- Bartel Associates, LLC, "20 Year AA Municipal Bond Quarterly Rates," April 13, 2019.
- Brown, Jeffrey R. and George G. Pennacchi, "Discounting Pension Liabilities: Funding versus Value," June 2015.
- Brownlee, Harold J., and Richard Daskais, "Pension plans-Choosing critical assumptions," In Proceedings 2nd AFIR Colloquium, vol. 2, pp. 153-62. 1991.
- Card, David, and Michael Ransom, "Pension Plan Characteristics and Framing Effects In Employee Savings Behavior - Working Paper 13275," National Bureau of Economic Research, July 2007.
- Damodaran, Aswath, "Valuing Distressed and Declining Companies," June 2009.
- Focardi, Sergio M., and Frank J. Fabozzi, *The Mathematics of Financial Modeling and Investment Management* (John Wiley & Sons, 2004).
- Governmental Accounting Standards Board, "Statement No. 45 of the Governmental Accounting Standards Board - Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions," June 2004.
- Governmental Accounting Standards Board, "Statement No. 67 of the Governmental Accounting Standards Board - Financial Reporting for Pension Plans, as an amendment of GASB Statement No. 25," June 2012.
- Hull, John C., *Options, Futures and Other Derivatives,* 9th Ed. (Boston, Prentice Hall, 2015).
- Moody's Investors Service, Inc, "Rating Symbols and Definitions," February 2019.
- Moser, Christoph, "The Impact of Political Risk on Sovereign Bond Spreads - Evidence from Latin America," November 2007.
- Municipal Securities Rulemaking Board, "Understanding Municipal Market Indices, Yield Curves and Benchmarks," August 2017.
- Official Statement, "$3,500,000,000 Commonwealth of Puerto Rico General Obligation Bonds of 2014, Series A," March 11, 2014.
- Puerto Rico Fiscal Agency and Financial Advisory Authority, "Treasury Single Account ("TSA") FY 2019 Cash Flow - As of May 31, 2019."
- Reorg Research, Inc., "Puerto Rico - Governor, AAFAF Criticize Pension Deal Between Oversight Board and Official Retiree Committee, Reiterate Opposition to Any Pension Cuts; Oversight Board Releases Statement," June 12, 2019.
- Reorg Research, Inc., "Puerto Rico - Official Retirees Committee Announces Pension Agreement With PROMESA Oversight Board; Will Be Incorporated Into a Commonwealth Plan of Adjustment," June 12, 2019.
- Reorg Research, Inc., "Puerto Rico - San Juan Mayor Discuses Order in Local Pay-Go Lawsuit, Skips Oversight Board Meeting at CRIM Based on City's Pending Lawsuit Against Board," June 11, 2019.
- Reorg Research, Inc., "Puerto Rico - United Public Servants Announces Deal With PROMESA Oversight Board, Including $1.36B in Pension Funding, $1,000 Signing Bonuses and Increased Health Plan Contributions," June 10, 2019.
- S&P Global Ratings, "Puerto Rico 'D' Unenhanced Ratings Discontinued On Bonds Being In Default More Than 30 Days," March 5, 2018.
- S&P Global Ratings, "S&P Global Ratings Definitions," October 31, 2018.
- SEC Office of Investor Education and Advocacy, "Investor Bulletin - What Are High-yield Corporate Bonds?," June 2013.
- Smith, Donald J., *Bond Math: The Theory Behind the Formulas* (John Wiley & Sons, 2011).
- Zvi Bodie, Alex Kane, and Alan J. Marcus, *Investments,* 8th Ed. (Boston: McGraw-Hill, 2009).

Documents from Production:

- ERS-MILLIMAN_LS0000001.
- ERS-MILLIMAN_LS0000002.
- ERS-MILLIMAN_LS0000003.
- ERS-MILLIMAN_LS0000004.
- ERS-MILLIMAN_LS0000005.
- ERS-MILLIMAN_LS0000006.
- ERS-MILLIMAN_LS0000007.
- ERS-MILLIMAN_LS0000008.
- ERS-MILLIMAN_LS0000009.
- ERS-MILLIMAN_LS0000010.
- ERS-MILLIMAN_LS0000011.
- ERS-MILLIMAN_LS0000012.
- ERS-MILLIMAN_LS0000013.
- ERS-MILLIMAN_LS0000014.
- ERS-MILLIMAN_LS0000015.
- ERS-MILLIMAN_LS0000016.
- ERS-MILLIMAN_LS0000017.
- ERS-MILLIMAN_LS0000018.
- ERS-MILLIMAN_LS0000019.
- ERS-MILLIMAN_LS0000020.
- ERS-MILLIMAN_LS0000021.
- ERS-MILLIMAN_LS0000022.
- ERS-MILLIMAN_LS0000023.
- ERS-MILLIMAN_LS0000024.
- ERS-MILLIMAN_LS0000025.
- ERS-MILLIMAN_LS0000026.
- ERS-MILLIMAN_LS0000027.
- ERS-MILLIMAN_LS0000028.
- ERS-MILLIMAN_LS0000029.
- ERS-MILLIMAN_LS0000030.
- ERS-MILLIMAN_LS0000031.
- ERS-MILLIMAN_LS0000032.
- ERS-MILLIMAN_LS0000033.
- ERS-MILLIMAN_LS0000034.
- ERS-MILLIMAN_LS0000035.
- ERS-MILLIMAN_LS0000036 - 038.
- ERS-MILLIMAN_LS0000039.
- ERS-MILLIMAN_LS0000040.
- ERS-MILLIMAN_LS0000041.
- ERS-MILLIMAN_LS0000042.
- ERS-MILLIMAN_LS0000043.
- ERS-MILLIMAN_LS0000044.
- ERS-MILLIMAN_LS0000045.
- ERS-MILLIMAN_LS0000046.
- ERS-MILLIMAN_LS0000047.
- ERS-MILLIMAN_LS0000048.
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- ERS-MILLIMAN_LS0000055.
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- ERS-MILLIMAN_LS0000108.
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- ERS-MILLIMAN_LS0000111.
- ERS-MILLIMAN_LS0000112.
- ERS-MILLIMAN_LS0000113 - 117.
- ERS-MILLIMAN_LS0000118 - 120.
- ERS-MILLIMAN_LS0000121 - 122.
- ERS-MILLIMAN_LS0000123.
- ERS-MILLIMAN_LS0000124.
- ERS-MILLIMAN_LS0000125.
- ERS-MILLIMAN_LS0000126.
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- ERS-MILLIMAN_LS0000131.
- ERS-MILLIMAN_LS0000132.
- ERS-MILLIMAN_LS0000133.
- ERS-MILLIMAN_LS0000134 - 135.
- ERS-MILLIMAN_LS0000136.
- ERS-MILLIMAN_LS0000137.
- ERS-MILLIMAN_LS0000138.
- ERS-MILLIMAN_LS0000139.
- ERS-MILLIMAN_LS0000140.
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- ERS-MILLIMAN_LS0000150.
- ERS-MILLIMAN_LS0000151.
- ERS-MILLIMAN_LS0000152.
- ERS-MILLIMAN_LS0000153.
- ERS-MILLIMAN_LS0000154.
- MALHOTRA0000001.
- MALHOTRA0000002.
- MALHOTRA0000003 - 007.
- MALHOTRA0000008 - 080.
- MALHOTRA0000081 - 085.
- MALHOTRA0000086.
- MALHOTRA0000087 - 097.
- MALHOTRA0000098 - 109.
- MALHOTRA0000110 - 178.
- MALHOTRA000179.